AD-A121 645 A STUDY OF THE EFFECT OF ECONOMIC AND INFLATION RELATED FACTORS UPON BUSI..(U) NOTRE DAME UNIV IN J G BEVERLY ET AL. SEP 80 F33615-79-C-5156 3/3

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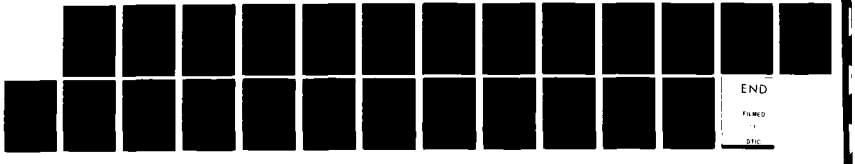

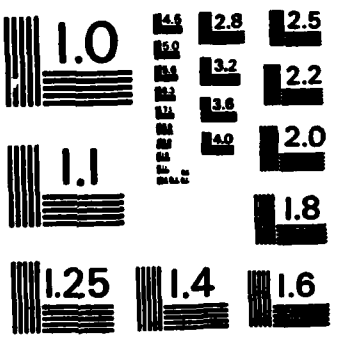

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

Actual Equation 1965

INTURN = A_1 + .01821 (GSALE) + .00055 (NSALE) - .00076 (NETPL)

P-Value = .0277 .2018 .577

R^2 = .035 F = 2.51 DF = 170

Actual Equation 1966

INTURN = A_1 + .01406 (GSALE) + .00020 (NSALE) - .00004 (NETPL)

P-Value = .0747 .6066 .9737

R^2 = .017 F = 1.31 DF = 193

Actual Equation 1967

INTURN = A_1 + .00604 (GSALE) + .00010 (NSALE) - .00009 (NETPL)

P-Value = .6027 .8534 .9548

R^2 = .002 F = .12 DF = 214

Actual Equation 1968

INTURN = A_1 + .00322 (GSALE) + .00019 (NSALE) - .00014 (NETPL)

P-Value = .7921 .7281 .9377

R^2 = .002 F = .13 DF = 239

Actual Equation 1969

INTURN = A_1 + .02077 (GSALE) - .00031 (NSALE) + .00067 (NETPL)

P-Value = .3229 .7740 .8267

R^2 = .004 F = .34 DF = 260

Actual Equation 1970

INTURN = A_1 + .00818 (GSALE) + .00021 (NSALE) - .00068 (NETPL)

P-Value = .6633 .8070 .7578

R^2 = .001 F = .11 DF = 262

Actual Equation 1971

INTURN = A_1 - .00305 (GSALE) - .00003 (NSALE) - .00025 (NETPL)

P-Value = .8878 .9750 .9155

R^2 = .0003 F = .03 DF = 262

Actual Equation 1972

INTURN = A_1 + .00934 (GSALE) - .00006 (NSALE) + .00008 (NETPL)

P-Value = .5202 .9130 .9609

R^2 = .002 F = .15 DF = 263

Actual Equation 1973

INTURN = A_1 + .00507 (GSALE) + .000005 (NSALE) + .00019 (NETPL)

P-Value = .6416 .9903 .8612

R^2 = .001 F = .11 DF = 268

Actual Equation 1974

INTURN = A_1 + .02367 (GSALE) - .00009 (NSALE) + .00037 (NETPL)

P-Value = .0392 .7996 .7180

R^2 = .016 F = 1.44 DF = 270

Actual Equation 1975

INTURN = A_1 + .02436 (GSALE) + .00003 (NSALE) + .00006 (NETPL)

P-Value = .0559 .9351 .9591

R^2 = .014 F = 1.26 DF = 270

Actual Equation 1976

INTURN = A_1 + .03262 (GSALE) + .00013 (NSALE) - .00016 (NETPL)

P-Value = .0185 .7117 .8843

R^2 = .022 F = 2.01 DF = 272

Actual Equation 1977

INTURN = A_1 + .05785 (GSALE) + .000005 (NSALE) + .00007 (NETPL)

P-Value = .0031 .9917 .9628

R^2 = .032 F = 3.00 DF = 274

Actual Equation 1978

INTURN = A_1 + .04822 (GSALE) - .00001 (NSALE) + .00009 (NETPL)

P-Value = .0096 .9758 .9482

R^2 = .025 F = 2.29 DF = 272

Table 40
Dependent Variable: INTURN
Step 2: INTURN = f (GSALE2, GSALE3, NSALE, NETPL)

Actual Equation 1960

INTURN = A_1 + .75118 (GSALE2) + 3.22697 (GSALE3) - .00058 (NSALE)

P-Value = .2493 .0001 .4632

+ .00675 (NETPL)

.0264

R^2 = .136 F = 5.85 DF = 149

Actual Equation 1961

INTURN = A_1 + .54209 (GSALE2) + 2.42560 (GSALE3) - .00009 (NSALE)

P-Value = .3419 .0002 .8951

+.00573 (NETPL)

.0275

R^2 = .134 F = 6.37 DF = 165

Actual Equation 1962

INTURN = A_1 + .37428 (GSALE2) + 1.75898 (GSALE3) + .00076 (NSALE)

P-Value = .4744 .0022 .2026

+ .00033 (NETPL)

.8831

R^2 = .076 F = 3.82 DF = 185

Actual Equation 1963

INTURN = A_1 + .61640 (GSALE2) + 2.38223 (GSALE3) + .00083 (NSALE)

P-Value = .1792 .0001 .0980

- .00001 (NETPL)

.9952

R^2 = .131 F = 7.59 DF = 201

Actual Equation 1964

INTURN = A_1 + 1.24912 (GSALE2) + 2.20700 (GSALE3) + .00057 (NSALE)

P-Value = .0291 .0005 .3162

- .00041 (NETPL)

.8315

R^2 = .076 F = 4.20 DF = 205

Actual Equation 1965

INTURN = A_1 + .85855 (GSALE2) + 1.37096 (GSALE3) + .00051 (NSALE)

P-Value = .0749 .0091 .2323

- .00063 (NETPL)

.6426

R^2 = .048 F = 2.75 DF = 220

Actual Equation 1966

INTURN = A_1 + .82822 (GSALE2) + .97290 (GSALE3) + .00012 (NSALE)

P-Value = .0807 .0615 .7284

+ .00009 (NETPL)

.9333

R^2 = .024 F = 1.47 DF = 236

Actual Equation 1967

INTURN = A_1 + .04692 (GSALE2) + .63916 (GSALE3) + .00011 (NSALE)

P-Value = .9472 .4083 .8317

- .00007 (NETPL)

.9646

R^2 = .003 F = .20 DF = 244

Actual Equation 1968

INTURN = A_1 + .11025 (GSALE2) + .30927 (GSALE3) + .00018 (NSALE)

P-Value = .8829 .7074 .7388

- .00011 (NETPL)

.9492

R^2 = .002 F = .11 DF = 254

Actual Equation 1969

INTURN = A_1 + 2.43225 (GSALE2) + .93897 (GSALE3) - .00056 (NSALE)

P-Value = .0652 .5064 .6035

+ .00115 (NETPL)

.7056

R^2 = .013 F = .87 DF = 265

Actual Equation 1970

INTURN = A_1 - .09495 (GSALE2) + .52681 (GSALE3) + .00026 (NSALE)

P-Value = .9355 .6777 .7623

- .00078 (NETPL)

.7242

R^2 = .001 F = .09 DF = 267

Actual Equation 1971

INTURN = A_1 + .00970 (GSALE2) - .16048 (GSALE3) - .00004 (NSALE)

P-Value = .9943 .9127 .9646

- .00022 (NETPL)

.9252

R^2 = .0003 F = .02 DF = 267

Actual Equation 1972

INTURN = A_1 + .91034 (GSALE2) + .34372 (GSALE3) - .00011 (NSALE)

P-Value = .3212 .7289 .8450

+ .00015 (NETPL)

.9261

R^2 = .004 F = .26 DF = 267

Actual Equation 1973

INTURN = A_1 + .00707 (GSALE2) + .35039 (GSALE3) + .00002 (NSALE)

P-Value = .9918 .6382 .9623

+ .00017 (NETPL)

.8820

R^2 = .001 F = .09 DF = 269

Actual Equation 1974

INTURN = A_1 + .81669 (GSALE2) + 1.27874 (GSALE3) - .00010 (NSALE)

P-Value = .2608 .1011 .7884

+ .00037 (NETPL)

.7254

R^2 = .012 F = ,82 DF = 270

Actual Equation 1975

INTURN = A_1 + .60990 (GSALE2) + 1.26665 (GSALE3) + .00005 (NSALE)

P-Value = .4491 .1436 .8995

- .00001 (NETPL)

.9939

R^2 = .009 F = .60 DF = 270

Actual Equation 1976

INTURN = A_1 + .51668 (GSALE2) + 2.16226 (GSALE3) + .00017 (NSALE)

P-Value = .5526 .0216 .6320

- .00027 (NETPL)

.8138

R^2 = .021 F = 1.43 DF = 271

Actual Equation 1977

INTURN = A_1 + .27781 (GSALE2) + 3.44120 (GSALE3) + .00011 (NSALE)

P-Value = .8216 .0098 .8138

- .00028 (NETPL)

.8828

R^2 = .025 F = 1.77 DF = 272

Actual Equation 1978

INTURN = A_1 - .03629 (GSALE2) + 2.67797 (GSALE3) + .00011 (NSALE)

P-Value = .9755 .0347 .8183

- .00024 (NETPL)

.8674

R^2 = .018 F = 1.23 DF = 271

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have lower inventory levels and higher order-backlogs and/or higher costs of sales which we have noted above in other modeled areas.

Step 2 Model: Gross to Net Plant Model

RPLANT = f(GSALE, NSALE, NETPL)

For the step 1 results for RPLANT we find a different pattern over the time period. GSALE becomes significant during 1969 and remains so for the remainder of the period, as shown in Table 41, When we look at the step 2 models in Table 42, we find that firms that are moderately dependent on government sales showed significance two or three years before the firms that were heavily dependent on government sales. There is some reason to believe that GSALE2 is fading out of significance at the present time. It was relatively weak in 1978. This could indicate that GSALE3 would become insignificant around 1981 if it follows the same lag as found earlier.

The reasons for this pattern are obscure. There was not any major change in the sample values of RPLANT over the time periods. From 1960 through 1968 the mean of RPLANT ranged between 1.82 and 1.99, while the standard deviation remained between .42 and .58. From 1969 through 1978 the mean ranged between 1.79 and 2.04 while the standard deviation was between .42 and .67. This seems to indicate that the difference in these two time periods is not due to a legal or accounting change in the definition of net plant, but seems to indicate a real change over that period. One possible explanation for this is that government contractors are more likely to have older plants with greater depreciation than are control companies. This is consistent with our definition of prime contractors as less efficient and more labor intensive than control corporations. The relative undercapitalization of prime contractors would be consistent with this. During the later inflationary period, prime contractors have apparently been less willing than control

Table 41
Dependent Variable: RPLANT
Step 1: RPLANT = f (GSALE, NSALE, NETPL)

Actual Equation 1960

RPLANT = A_1 + .00118 (GSALE) + .00012 (NSALE) + (NETPL)

P-Value = .4407 .2466 .4798

R^2 = .066 F = 3.44 DF = 97

Actual Equation 1961

RPLANT = A_1 + .00038 (GSALE) + .00013 (NSALE) + .00020 (NETPL)

P-Value = .7915 .2207 .6105

R^2 = .0489 F = 2.78 DF = 114

Actual Equation 1962

RPLANT = A_1 + .00188 (GSALE) + .00016 (NSALE) + .00012 (NETPL)

P-Value = .2321 .1522 .76600

R^2 = .050 F = 3.11 DF =- 128

Actual Equation 1963

RPLANT = A_1 + .00039 (GSALE) + .00014 (NSALE) + .00010 (NETPL)

P-Value = .8102 .1989 .8098

R^2 = .031 F = 2.04 DF = 148

Actual Equation 1964

RPLANT = A_1 + .00115 (GSALE) + .00014 (NSALE) - .00006 (NETPL)

P-Value = .4511 .1296 .8488

R^2 = .028 F = 1.90 DF - 149

Actual Equation 1965

RPLANT = A_1 + .00133 (GSALE) + .00007 (NSALE) + .00022 (NETPL)

P-Value = .1234 .1356 .8005

R^2 = .033 F = 2.38 DF = 170

Actual Equation 1966

RPLANT = A_1 + .00120 (GSALE) + .00009 (NSALE) - .00005 (NETPL)

P-Value = .3282 .1569 .7607

R^2 = .021 F = 1.62 DF = 193

Actual Equation 1967

RPLANT = A_1 + .00118 (GSALE) + .00007 (NSALE) - .00002 (NETPL)

P-Value = .2793 .1691 .9068

R^2 = .026 F = 2.09 DF = 214

Actual Equation 1968

RPLANT = A_1 + .00189 (GSALE) + .00006 (NSALE) + .00005 (NETPL)

P-Value = .0726 .2139 .7459

R^2 = .044 F = 3.92 DF = 239

Actual Equation 1969

RPLANT = A_1 + .00203 (GSALE) + .00006 (NSALE) + .00003 (NETPL)

P-Value = .0482 .2437 .8330

R^2 = .044 F = 4.12 DF = 260

Actual Equation 1970

RPLANT = A_1 + .00317 (GSALE) + .00005 (NSALE) + .00001 (NETPL)

P-Value = .0037 .3248 .9075

R^2 = .048 F = 4.46 DF = 262

Actual Equation 1971

RPLANT = A_1 + .00442 (GSALE) + .00003 (NSALE) - 2.19840 (NETPL)

P-Value = .0014 .5728 .9988

R^2 = .042 F = 3.94 DF = 262

Actual Equation 1972

RPLANT = A_1 + .00498 (GSALE) + .00034 (NSALE) - .00002 (NETPL)

P-Value = .0021 .5849 .9111

R^2 = .038 F = 3.51 DF - 263

Actual Equation 1973

RPLANT = A_1 + .00615 (GSALE) + .00005 (NSALE) - .00004 (NETPL)

P-Value = .0001 .2368 .7282

R^2 = .104 F = 10.47 DF = 268

Actual Equation 1974

RPLANT = A_1 + .00632 (GSALE) + .00004 (NSALE) - .00004 (NETPL)

P-Value = .0001 .3307 .6881

R^2 = .107 F = 10.87 DF = 270

Actual Equation 1975

RPLANT = A_1 + .00632 (GSALE) + .00002 (NSALE) - .00002 (NETPL)

P-Value = .0001 .5436 .8735

R^2 = .104 F = 10.43 DF = 270

Actual Equation 1976

RPLANT = A_1 + .00706 (GSALE) + .00001 (NSALE) + .00001 (NETPL)

P-Value = .0001 .7426 .8959

R^2 = .113 F = 11.57 DF = 272

Actual Equation 1977

RPLANT = A_1 + .00577 (GSALE) + .00002 (NSALE) - .00001 (NETPL)

P-Value = .0001 .4131 .9414

R^2 = .100 F = 10.14 DF = 274

Actual Equation 1978

RPLANT = A_1 + .00535 (GSALE) + .00002 (NSALE) - .00001 (NETPL)

P-Value = .0001 .4821 .8731

R^2 = .078 F = 7.67 DF = 272

Table 42
Dependent Variable: RPLANT
Step 2: RPLANT = f (GSALE2, GSALE3, NSALE, NETPL)

Actual Equation 1960

RPLANT = A_1 + .08710 (GSALE2) + .10317 (GSALE3) + .00011 (NSALE) + .00033 (NETPL)

P-Value = .2834 .2605 .2939 .3854

R^2 = .070 F = 3.03 DF = 161

Actual Equation 1961

RPLANT = A_1 + .10729 (GSALE2) + .01903 (GSALE3) + .00012 (NSALE) + .00024 (NETPL)

P-Value = .2042 .8372 .2403 .5383

R^2 = .062 F = 2.84 DF = 173

Actual Equation 1962

RPLANT = A_1 + .09028 (GSALE2) + .15313 (GSALE3) + .00015 (NSALE) + .00016 (NETPL)

P-Value = .3576 .1492 .1938 .7180

R^2 = .049 F = 2.50 DF = 193

Actual Equation 1963

RPLANT = A_1 + .01008 (GSALE2) + .07710 (GSALE3) + .00014 (NSALE) + (NETPL)

P-Value = .9192 .4669 .1987 .7619

R^2 = .033 F = 1.75 DF = 204

Actual Equation 1964

RPLANT = A_1 + .10697 (GSALE2) + .10258 (GSALE3) + .00013 (NSALE) - .00001 (NETPL)

P-Value = .2513 .2995 .1647 .9649

R^2 = .034 F = 1.85 DF = 208

Actual Equation 1965

RPLANT = A_1 + .11778 (GSALE2) + .13906 (GSALE3) + .00011 (NSALE) - .00004 (NETPL)

P-Value = .1373 .0978 .1325 .8748

R^2 = .042 F = 2.42 DF = 223

Actual Equation 1966

RPLANT = A_1 + .14084 (GSALE2) + .06110 (GSALE3) + .00008 (NSALE) - .00003 (NETPL)

P-Value = .0561 .4372 .2041 .8805

R^2 = .034 F = 2.08 DF = 239

Actual Equation 1967

RPLANT = A_1 + .10722 (GSALE2) + .06860 (GSALE3) + .00006 (NSALE) - .000002 (NETPL)

P-Value = .1088 .3341 .2305 .9902

R^2 = .031 F = 1.99 DF = 247

Actual Equation 1968

RPLANT = A_1 + .16037 (GSALE2) + .10084 (GSALE3) + .00005 (NSALE) + .00006 (NETPL)

P-Value = .0125 .1420 .3013 .6710

R^2 = .056 F = 3.83 DF = 257

Actual Equation 1969

RPLANT = A_1 + .18739 (GSALE2) + .08360 (GSALE3) + .00005 (NSALE) + .00006 (NETPL)

P-Value = .0037 .2140 .3722 .7074

R^2 = .061 F = 4.39 DF = 270

Actual Equation 1970

RPLANT = A_1 + .20430 (GSALE2) + .13810 (GSALE3) + .00004 (NSALE) + .00003 (NETPL)

P-Value = .0029 .0533 .4675 .8058

R^2 = .053 F = 3.82 DF = 271

Actual Equation 1971

RPLANT = A_1 + .27366 (GSALE2) + .20449 (GSALE3) + .00002 (NSALE) + .00001 (NETPL)

P-Value = .0016 .0244 .7340 .9221

R^2 = .048 F = 3.44 DF = 271

Actual Equation 1972

RPLANT = A_1 + .29265 (GSALE2) + .23226 (GSALE3) + .00003 (NSALE) - .00001 (NETPL)

P-Value = .0041 .0305 .6778 .9512

R^2 = .041 F = 2.90 DF = 270

Actual Equation 1973

RPLANT = A_1 + .11629 (GSALE2) + .31845 (GSALE3) + .00005 (NSALE) - .00006 (NETPL)

P-Value = .0257 .0001 .2000 .6220

R^2 = .073 F = 5.39 DF = 273

Actual Equation 1974

RPLANT = A_1 + .21127 (GSALE2) + .32835 (GSALE3) + .00003 (NSALE) - .00005 (NETPL)

P-Value = .0045 .0001 .3548 .6653

R^2 = .080 F = 5.93 DF = 273

Actual Equation 1975

RPLANT = A_1 + .24970 (GSALE2) + .35606 (GSALE3) + .00002 (NSALE) - .00001 (NETPL)

P-Value = .0008 .0001 .6107 .9027

R^2 = .092 F = 6.94 DF = 273

Actual Equation 1976

RPLANT = A_1 + .29047 (GSALE2) + .40206 (GSALE3) + .00001 (NSALE) + .00002 (NETPL)

P-Value = .0002 .0001 .8096 .8764

R^2 = .105 F = 8.05 DF = 274

Actual Equation 1977

RPLANT = A_1 + .17888 (GSALE2) + .32644 (GSALE3) + .00002 (NSALE) - .00001 (NETPL)

P-Value = .0111 .0001 .3956 .8930

R^2 = .082 F = 6.12 DF = 275

Actual Equation 1978

RPLANT = A_1 + .14470 (GSALE2) + .31398 (GSALE3) + .00002 (NSALE) - .00002 (NETPL)

P-Value = .0523 .0001 .4439 .8149

R^2 = .065 F = 4.75 DF = 274

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corporations to turn over plant. The segment by segment analysis should help to clarify this.

In summary, we have not found evidence that prime contractors and control corporations differ in all cash flow and asset management areas. In inventory turnover (control) and plant management, however, we have found some evidence of significant differences that may be tied to the unstable inflationary environment in which these differences have arisen.

7. Analytical Conclusions and Inferences

In approaching the problem of basic research on the consolidated corporations constituting our prime contractor and control corporation sample, we determined that the best approach was to utilize certain standard and widely used accounting ratios. Thus these ratios were calculated for all prime contractor corporations in given SIC code industries and for all comparble control corporations in those same SIC code industries (e.g., Part II). We then compared the ratios for the companies in the various SIC code industries to determine the relative position of the prime contractors and control corporations. The results of this descriptive comparison would provide the hypotheses that we could use in modeling the differences between the prime contractors and the control corporations. For instance, the results of the ratio analysis suggested one important hypothesis:

Prime contractors are less efficient than control corporations.

The use of the ratio analysis provided an overall picture of the economic and business operations of the prime contractor and the control corporations. The ratios covered five areas of analysis which were:

a Product Specialization;

b. Profitability;

c. Inflation Reaction;

d. Production Efficiency;

e. Corporate Liquidity and Capital management.

We formalized the hypotheses from the descriptive or ratio analysis into the expectations of the subsequent model analysis in the five noted areas (e.g., Part III). The expectations amount to identifying the model specification, the dependent variable, the independent variables and the expected relationship between each independent variable and each dependent variable in each specification of each model.

Since this part of the research was inductive and was basic research we did take certain liberties in the modeling activity, primarily using alternative approaches in an effort to define the behavioral differences between prime contractors and control corporations. Because of a number of problems the modeling was largely restricted to cross sectional analysis over the 1970 through 1978 period. Experimentation with a time series approach and with a pooled-cross-sectional approach was attempted and alternative sets of varibles were utilized.

The basic modeling approach finally used established a set of eight MACRO variables which were used as independent variables in a majority of the models. These variables represented the size, sales characteristics of companies, efficiency characteristics of companies and the production factor mix of the companies (how much labor and how much capital are used in producing the product).

These MACRO variables are:

GSALE	percentage sales to the government;
NSALE	net sales;
NETPL	net plant;
EMP	number of employees hired;
COS	cost of sales ratio;
COR	capital output ratio;
LOR	labor output ratio; and
CLR	capital labor ratio.

The dependent variables are the appropriate level or ratio variables for each of the five areas noted above.

For all of the areas noted the set of MACRO variables operate with various levels of effectiveness as we move between dependent or explained variables. Generally, the models (as might be expected) are able to explain much higher degrees of variation in those dependent variables that are in level rather than in ratio form. A certain amount of experimentation was done in this basic research phase of the study in order to examine various aspects of the overall modeling techniques used. These are noted in the particular sections as used. In all instances the period studied was defined in reference to changes in inflationary price activity. The periods primarily used were:

a) 1970 - 1973 stable single digit inflation with price changes at about five percent per year;

b) 1974 - 1978 high and unstable single digit inflation and low double digit price changes. Unstable and erratic price variations from year to year.

Product Specialization

This area studied primarily firm activities with respect to research and development, inventory control, magnitude of order backlog. We found no difference between prime contractors and control corporations in levels of

research and development, order backlogs or inventories. We did find consistent and statistically significant differences between prime contractors and control corporations in the areas of raw material inventory control and order backlog ratios. That is, prime contractors had a higher order backlog to sales ratio and a lower raw material inventory to sales ratio than did control corporations.

Inflation Reaction

A number of measures were used that would gauge the reaction of firms to inflationary pressure. Overall the conclusion was that firms did behave differently in periods of different degrees of inflation. Further, as we would expect here, different measures of inflationary pressure showed different reactions. Finally, prime contractors did behave differently from control corporations.

a) The cash flow of prime contractors protected them against cash flow difficulties that appeared to beset control corporations. This would be because of the payment method used by the government. In this model, efficiency of resource use appeared to be a key to survival.

b) We concluded that in periods of high inflationary pressure with erratic price changes (1974 through 1978) the government payment method was most important in stabilizing cash flow. This would appear to be most important where cash flow related to liability and current asset management.

c) There appears to be an effort of companies to substitute capital for labor in inflationary periods. Companies appeared to be attempting to use this substitution as a hedge against inflationary price increase. There was no difference in behavior

between prime contractor and control corporations on this point.

d) Two additional models on profitability were used to attempt to isolate the question of profits as against inflationary price changes. Our previous results were confirmed in that efficiency was the primary determinant of profitability (any measure) for any period.

Production Efficiency

In this area of production efficiency, the four efficiency and product mix variables were used as dependent variables with the other four MACRO variables appearing as independent variables. For instance the form was:

COS = f(GSALE, NSALE, NETPL, EMP)

The analysis suggested the following conclusions:

a) Prime contractors are less efficient than control corporatons;

b) large firms are less efficient than small firms;

c) firms with fewer employees are less efficient than firms with many employees;

d) the efficiency of the firm varies indirectly with the magnitude of order backlogs (perhaps as expected);

e) the higher the amount (absolutely and relatvely) of research and development of a firm (product research) the more efficient the firm;

f) prime contractors are less capital intensive and more labor intensive than control corporations;

g) the larger the firm the more capital intensive it is; and

h) the more research and development undertaken, the more capital intensive the firm.

Corporate Liquidity and Capital Management

In this area we focused on problems of inventory turnover and age of plant. The inventory turnover model indicated that the higher the percentage of sales to the government, the higher the inventory turnover ratio. This is consistent with our previous conclusions regarding efficiency, raw material inventories and order backlog. It also appeared that the turning points in the significance of government sales was coincident with changes in the inflationary rates and degree of inflation instability. This model was run from 1960 through 1978.

In examining the age of the plant the interpretation is that the higher the percentage sales to the government the older the plant. Prime contractors appeared to be permitting the plants to age, which would account for the substitution of labor for capital, and for the inefficiencies noted in prime contractors. The relative undercapitalization and age of plants of prime contractors is the result. We noted that these problem appeared most strongly in the later periods of high and unstable inflationary price changes.

In summary, we have not found evidence that prime contractors and control corporations differ in all cash flow and asset management areas. In the area of corporate inventory turnover and asset management we have found corroborative evidence of significant differences that may well be tied to inflationary changes as well as to the constraints of selling to the government.

These conclusions must be tempered by the fact that they represent the results of out basic research using the consolidated corporation as the analytic unit. The research in Phase II, by allowing for segment by segment analysis of the same corporations used in Phase I, should not only render a

clarification of the issues but also lead to greater confidence in the empirical results.